

FACTORIZING

$$1) (x-5)(x-4) \quad \begin{array}{r} -20 \mid 9 \\ \hline \end{array}$$

$$2) \frac{(x+5)(x+1)}{(x-4)(x+1)} = \frac{x+5}{x-4}$$

$$3) (3x-1)(x+4)$$

$$4) 2(x^2+10x+21) \\ \boxed{2(x+7)(x+3)}$$

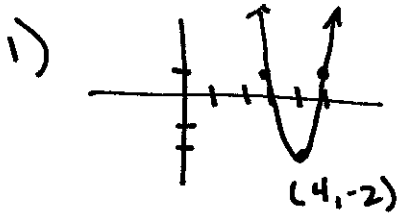
$$5) 4xy(3y-x)$$

$$6) a^3-4a^2+3a-12 \\ a^2(a-4)+3(a-4)$$

$$\boxed{(a^2+3)(a-4)}$$

$$7) (5n-12)(5n+12)$$

QUADRATICS



2) A. (-4, -1) B. $x = \frac{-(-8)}{2(1)} = \frac{8}{2} = 4$ $f(2) = 2^2 - 8(2) + 3$
 $= 4 - 16 + 3 = -9$
(4, -9)

3) $y = x^2 - 8x - 20$

$(x - 10)(x + 2) = 0$

$x - 10 = 0$

$x = 10$

$x + 2 = 0$

$x = -2$

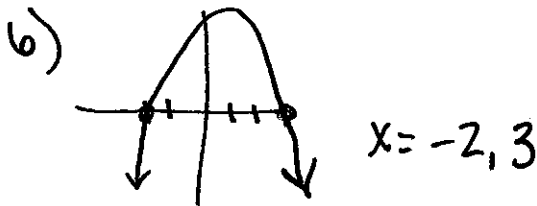
4) $x = \frac{-8 \pm \sqrt{8^2 - 4(3)(-7)}}{2(3)}$

$= \frac{-8 \pm \sqrt{64 + 84}}{6} = \frac{-8 \pm \sqrt{148}}{6}$

$= \frac{-8 \pm 12.17}{6} \rightarrow \frac{-8 + 12.17}{6} = \frac{4.17}{6} = \underline{0.78}$

$\downarrow \frac{-8 - 12.17}{6} = \underline{-3.36}$

5) $f(0) = 2(0)^2 - 12(0) + 5 = 5$ (0, 5)



7) A. $y = -4(x+1)^2 - 3$
 reflected over x
 skinny
 left 1
 down 3

B. $y = \frac{1}{4}x^2 + 6$
 wider
 shift up 6

8) $h(2) = -9.8(2)^2 + 500$
 $= -39.2 + 500 = \underline{460.8 \text{ ft}}$

$$\underline{i}$$

$$1) (7+i)(4-2i)$$

	7	i
4	28	4i
-2i	-14i	-2i ²

$$28 - 10i - 2(-1)$$

$$28 - 10i + 2$$

$$\boxed{30 - 10i}$$

$$2) \sqrt{-49} = 7i$$

$$3) 10 + 3i + 5 - 7i = \boxed{15 - 4i}$$

$$4) (\sqrt{10-3x})^2 = (2i)^2$$

$$10 - 3x = 4i^2 = 4(-1) = -4$$

$$\begin{array}{r} 10 - 3x = -4 \\ -10 \quad -10 \\ \hline -3x = -14 \end{array}$$

$$x = \frac{14}{3} = 4.\bar{6}$$

$$5) g(3i) = (3i)^2$$

$$= 9i^2 = 9(-1) = \boxed{-9}$$

$$6) x^2 + 25 = 0$$

$$\begin{array}{r} -25 \quad -25 \\ \hline \end{array}$$

$$\sqrt{x^2} = \sqrt{-25}$$

$$\boxed{x = \pm 5i}$$

MATRICES

$$1) \begin{bmatrix} - \\ - \\ - \\ - \\ - \end{bmatrix} \begin{bmatrix} 1 \\ 1 \end{bmatrix}$$

oops! No #2

$$3) \begin{bmatrix} 7 \\ 9 \\ 14 \end{bmatrix} + \begin{bmatrix} -5 \\ 2 \\ 6 \end{bmatrix} = \begin{bmatrix} 2 \\ 11 \\ 20 \end{bmatrix}$$

$$4) \begin{bmatrix} 6 & 10 \\ 5 & 7 \end{bmatrix} + \frac{1}{2} \begin{bmatrix} 12 & -10 \\ 20 & 9 \end{bmatrix}$$
$$\begin{bmatrix} 6 & 10 \\ 5 & 7 \end{bmatrix} + \begin{bmatrix} 6 & -5 \\ 10 & 4.5 \end{bmatrix} = \begin{bmatrix} 12 & 5 \\ 15 & 11.5 \end{bmatrix}$$

$$5) \begin{bmatrix} 15 & 32 \\ 8 & 7 \end{bmatrix} - \begin{bmatrix} 6 & 10 \\ 4 & -5 \end{bmatrix} = \begin{bmatrix} 9 & 22 \\ 4 & 12 \end{bmatrix}$$

$$6) -3A = \begin{bmatrix} 6 & -33 & 27 \\ -9 & -21 & -3 \end{bmatrix}$$

$$7) \begin{bmatrix} 4 & 5 & -6 & 15 \\ -6 & 5 & -4 & 35 \\ 2 & 3 & -3 & -7 \end{bmatrix} \xrightarrow{\text{B: rref}} \begin{bmatrix} 1 & 0 & 0 & -8.46 \\ 0 & 1 & 0 & -29 \\ 0 & 0 & 1 & -32.307 \end{bmatrix}$$

$$\underline{x = -8.46, y = -29, z = -32.307}$$

EXPONENTIALS

1) A. $2^{3x-5} = 16 = 2^4$

$$3x-5=4$$

$$3x=9$$

$$\boxed{x=3}$$

B. $7^{x+4} = 7^{3x-2}$

$$\begin{matrix} x+4 & = & 3x-2 \\ -x & & -x \end{matrix}$$

$$4 = 2x-2$$

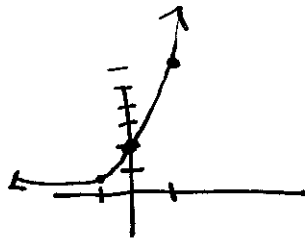
$$6 = 2x$$

$$\boxed{x=3}$$

2) $5^{-1} = \frac{1}{5}$ $8^0 = 1$

3) $y = 2 \cdot 3^x$

x	y
-1	2/3
0	2
1	6



4) A.

x	y
-1	2/3
0	7
1	21

$7 = a$
 $21 = a \cdot 3 = b$

$$\boxed{y = 7 \cdot 3^x}$$

B. $(0, -4)$ $(1, -12)$

$a = -4$ $b = 3$

$$\boxed{y = -4(3)^x}$$

5) B.

6) $a = 10,000$ $b = 100\% - 10\% = 90\% \Rightarrow 0.90$

$$y = 10,000 (0.9)^x$$

7) A. Decay B. Graph C. Decay

LOGS

1) $\log_5 125 = 3$

2) $2^5 = 32$

3) A. $\log_3 9 = x$

$$3^x = 9$$

$$x = 2$$

B. ~~2^{15}~~

$$15$$

4) A. $\log_4 x = 3$

$$4^3 = x$$

$$x = 64$$

B. $\log_3 7 + \log_3 x = 6$

$$\log_3 7x = 6$$

$$3^6 = 7x$$

5) A. $\log 5 \cdot 4$

$$\log 20$$

B. $\log 10 - \log 2$

$$\log \frac{10}{2}$$

$$\log 5$$

C. $3 \log 2$

$$\log 2^3$$

$$\log 8$$